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[54] **SITE WORKSPACES LAYOUT PROCESS EMPLOYING MDS AND A PDI FORMULA IN WHICH DENSITY IS BASED ON AREA OF CIRCUMSCRIBING-CONVEX-HULLS**

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[*] Notice: This patent is subject to a terminal disclaimer.

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[58] **Field of Search** 364/512, 578, 364/468.04; 434/72; 395/919, 921, 923; 705/1, 5, 6, 8

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[57] **ABSTRACT**

A process is provided for producing layouts of building units on a quadrilateral facility site, and layouts of personnel workstations and items of equipment (collectively "workplace elements") in quadrilateral subarea in the building units. There are inter-building-unit, and inter-workplace-element, operational criteria associated with the activity being performed in the facility. The well known multi-dimensional scaling (MDS) methodology is employed in optimizing building unit and workplace element configurations to suit the operational criteria. Measurement of population density index (PDI) is employed to judge whether candidate configurations of building units and workplace elements result in adverse crowdedness conditions. The PDI employed for this purpose is novel. The novelty of the PDI is its use of a "convex hull" (in the mathematical sense of the term) circumscribed about the perimetrical objects in a candidate configuration. The equation for the PDI then employ the polygon interior of the convex hull in calculation of a density related term of the equation.

12 Claims, 9 Drawing Sheets